JOURNAL

OF THE

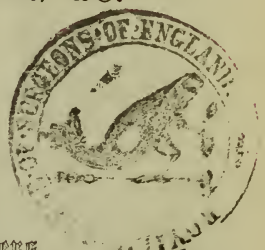
EXPEDITION

FOR THE

Exploration of the Fly River,

BY

L. M. D'ALBERTIS, C.M.Z.S., &c.



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EXPLORATION OF THE FLY RIVER,

NEW GUINEA.

By L. M. D'Albertis, *Corr. Mem. Zool. Soc.* &c.

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To the Committee of the D'Albertis Expedition for the Exploration of the Fly River.

Gentlemen,—Having received from Signor D'Albertis the journal kept by him during his recent expedition for the exploration of the Fly River, New Guinea, I have translated those portions which I considered would be of public interest, and send them to you for the information of the subscribers, a copy of which has also been sent to the Government. The perilous nature of the expedition to those engaged in it may be understood when it is known that the steam-launch Neva was an open boat of about twelve tons, and was deeply laden with stores and fuel. On leaving Somerset her complement was ten men, three of whom were white men, one Chinese, and six men of colour. The collection of living plants obtained during the expedition was very large, and those that survived were presented to the Sydney Botanic Gardens. The collection of dried plants, together with fruits and flowers of those which only could be preserved in spirits, were forwarded to Baron von Mueller, at Melbourne, who, as will be seen in the appendix, speaks very highly of the collection, and is now engaged in identifying and describing them in his forthcoming fourth and subsequent Parts of the Papuan Plants, respecting one of which, a fine Hibiscus, which he has named after its discoverer, Hibiscus Albertisii, he says.—"Its nearest affinity is with Hibiscus tupuliflorus of Hooker, of Guadaloupe, and Dominica, in the West Indies," and it is not a little remarkable that, coinciding with this, M. D'Albertis discovered a singular South American form of rapacious bird—a harpy, named by Salvadori

Harpyopsis, Novæ Guineæ. Among the plants, Baron von Mueller also mentions a new Mucuna, of which D'Albertis considers there are probably three species, bearing red, yellow, and blue flowers, all very handsome. The climbing plants bearing red flowers were in great abundance on the banks of the Fly River, and D'Albertis describes the pendulous masses of elegant flowers, covering from the base to the top of the loftiest trees, to be one of the most gorgeous and beautiful sights it is possible to behold. The yellow-flowering species was very rare, and only seen in the interior of New Guinea, in latitude 6° south, on the banks of the Fly River. In this species the flowers were only seen on the tops of the trees, forming a dense mass, and were not seen hanging in festoons or blossoms as in the former. Of the last, nothing but the blue flowers were collected, as the blossoms were found strewed upon the ground, but the plant producing them not having any flowers visible, could not be distinguished from the general mass of creepers over the tree.

I remain, Gentlemen, yours faithfully,

GEORGE BENNETT, M.D., F.L.S.

Sydney, January 15, 1877.

P.S.—With reference to the superstitious fears among the natives respecting rockets, alluded to on this and previous occasions by Mr. D'Albertis, the following extract from the recently published life of Norman McLeod, D.D., may be interesting — "He had provided himself when visiting Palestine, before leaving London, with musical snuff-boxes and *fireworks*. It was his delight to hear the 'mashallah' of the astonished natives when music burst out in some unexpected corner, or when a rocket whizzed aloft and fell in a shower of fire. He claimed this use of fireworks as an original invention for the protection of travellers, and he was so confident of its merits that he would not have been sorry had the Bedawin of the Jordan given him a fair opportunity of showing the effect on their valour of a discharge of crackers or a bouquet of rockets."

JOURNAL

OF THE EXPEDITION FOR THE EXPLORATION OF THE FLY RIVER.

By L. M. D'Alberti, C.M.Z.S., &cs.

I left Sydney on the 20th April, 1876, in the mail steamer Brisbane, for Somerset, with Mr. Hargrave, the engineer, Moreman (a sailor) and Mr. Wilcox. I expected to get some native troopers from the Government at Brisbane, Queensland, but felt much disappointed that from the great demand for the police at Cooktown, none could be spared; but on my arrival at Cooktown I succeeded in engaging six men of colour. I arrived at Somerset on the 1st May, and disembarked the Neva safely. From the 2nd to the 5th of May we were employed in fitting out the Neva, and on the 6th left Somerset at 2 p.m. on a trial trip, under a steam pressure of 30 lbs., proposing to visit Mount Adolphus Island, but the wood we used being wet, we stopped at Muddy Bay until we had attained a power of 40 lbs. steam pressure, when we started for Cape York Island, and anchored at 4.15 p.m. west of Cape York, cut wood, and remained for the night.—May 7: Passed the day on shore; the bilge water was very offensive on board the Neva and discoloured the paint.—May 8: Left Cape York at 11 a.m., under a steam pressure of 40 lbs.; passed east of Albany Island, and anchored at Somerset at 1.30 p.m, For five miles we had a current in our favour, and for three miles the current was against us, but the sea was calm.—May 9 to 11: Engaged in completing the arrangement and stowage of the Neva.—May 12: Purchased two tons of coal from the steamer Bowen, and was annoyed by some of the men getting drunk.—May 24 and 14: Engaged in loading the Neva.—May 15: Was informed that Moreman was unwilling to go with the expedition, as higher wages had been offered to him; I therefore proposed to Moreman to discharge him, on condition that he repaid the money I had advanced to his wife and his passage money from Sydney, but he replied that it was his intention to go with the expedition,—May 16: Moreman left last night; I was told he left with Captain Hovell on board his vessel.—May 17: Moreman has not been seen in Somerset.—May 18: Called

on the Police Magistrate for a warrant to be issued against Moreman. The weather being fine and calm, I left Somerset at 1 p.m., and anchored at Harvey Rocks. Some of the bars of the furnace melted, so that we had to lessen our steam and help with the sail. Mr. Hargrave had an attack of fever.—May 19: We left our anchorage at 7 a.m., and anchored at 10.15 at Long Island, where we remained all day and night, the engineer still continuing ill; the weather was very fine.—May 20: Started at 7 a.m. and steamed until noon, and then sailed until 5 p.m., for we could not get fresh water at Long Island.—May 21: We left at 7 a.m. under steam; at 9 a.m. saw the schooner Pacific at anchor on the Warrior Reef; we steered towards her, as she had some coal, rice, and biscuit on board for us; at 10 a.m. we went on board the schooner, and received our supplies, and then left for Katow at 10.30 a.m.; being over the coral reef, and having no chart, we had some difficulty in keeping onrselves clear of accidents. Following one of the pearl fishing boats, we sighted the coast of New Guinea, and landed at Katow at 3.30 p.m., being desirous of procuring a pilot to Kiwai. Maino, his son, and another young native promised to go with me to-morrow to Kawai.—May 22: Early this morning I landed again at the village (Moatta), and found that Maino, his son Waruki, and Dowan were ready and willing to accompany me as pilot to Kiwai. We left at 9 a.m. for Bristow Island, about two and a half miles distant from the mainland, and found a good channel from 3 to 7 fathoms deep. About 1 p.m. we were abreast of a coral reef east of Bristow Island; passed about a mile from the reef, sounded at low water, and found from 4 to 5 fathoms. After clearing the reef, steered for Bampton Island, named by the natives Parama. At 4.30 p.m. we sighted Breakfast Island, named by the natives Mibu. At 7.15 p.m. anchored three miles south of of this island in two fathoms of water.—May 23: At dead low water during the night the Neva struck the bottom, which, being rocky, occasioned some alarm, but fortunately the steamer received no injury, it being very calm at the time. At 7.30 a.m. we left for a small village, at Kiwai Island, south-east of Mibu, named by the natives Tzamari, and anchored in front of the village, about a mile from the shore, on account of a mud flat. At 3 p.m. went on shore, the natives of the island being on very friendly terms with the Moatta people, we were well received by them, and ready to sell provisions in any quantity, consisting of pigs, bananas, yams, and cocoanuts, the medium of exchange being tobacco; so having loaded the dingy with a large stock of provisions, we had to refuse to purchase any more. Remained at our anchorage all night.—May 24: We had a strong breeze during the night, with heavy rain in the morning, but it cleared up and became very fine during the remainder of the day. A few miles above Tzamari we found the water fresh. We passed close to some islands, opposite to Kiwai Island, and found a good channel five fathoms deep, and shoaling to one or two fathoms, but it is very probable that we

had got out sometimes from the proper channel. Anchored at 11.30 a.m. opposite a village at Kiwai, named Para by the natives. This village can be readily recognised by some lofty trees, which are very remarkable by being flat on the top. We found the current here ran from four to five knots an hour. The natives of this village did not come to us, and we saw only a small canoe, in which were two men, far away. Landed on an island opposite the village to cut wood, which we named Hixson Island.—May 25: Left Hixson Island at 7.30 a.m., but the wood being wet we made but slow progress, but derived some assistance from our sail. After clearing Kiwai we had a fresh south-east breeze, and made good speed. Passed Attack and Long Islands without seeing any natives, and I made at this part some alteration in the chart planned in the former voyage of the Ellangowan. We were in a good channel of from five to seven fathoms deep. Passed on the left, close to an island, which, judging from its vegetation, is of recent formation; this was named Bennett Island, We now got into shallow water, but close to Canoa Island there is a channel of seven or eight fathoms; anchored at the same place as when in the Ellangowan. We have not yet seen any natives.—May 26: This morning, about 7 a.m., two canoes were seen about a quarter of a mile from the Neva; a short time after three more appeared behind, but kept at a distance. We made signs and held out baits to them, by waving red calico, and called to them, but it was of no use. At 8.30 a.m. we raised the anchor, and the noise of our whistle and steam caused them to take flight, and to enable them to pull away faster they left some of the canoe fittings behind. They were not armed or attired in their war dresses. I regretted I could not communicate with them, as they seemed to me to be the same people by whom we were well received in the Ellangowan. We tried to pass close to the village on the mainland west of Canoa Island, but we were obliged to stop at noon, as we found we had got into shallow water and had but little steam, from the wood being too green. About this place are many sandbanks, dry at low water and difficult to cross. It was at this place the Ellangowan struck. I believe that when the River is properly surveyed, a safe and deeper channel will be found nearer to the eastern bank. At 5.30 p.m. we reached Howling Point, where in the voyage of the Ellangowan we had seen natives. We, however, did not see any to-day, but heard the dogs barking, and saw some smoke. Anchored for the night. At dark we sent up some rockets, and made an experiment with a combination of the dynamite with the rocket, which consisted of inserting the fuse of a cartridge of dynamite, to which the cartridge was secured, into the body of the rocket. The first trial wrs unsuccessful, as probably the rocket exploded before the fire had communicated with the fuse. The second time was a success, proving the possibility of sending a cartridge of dynamite to a great distance, and which will explode after the rocket is spent. The time for the explosion of the dynamite may be regulated by

the length of the fuse. It is wonderful the effect it produces at night, hearing the heavy report of the dynamite after the explosion of the rocket and its shower of fire. We did not expect that the natives would venture to attack us that night. The day had been very fine.—May 27 : We did not see any fires on the land last night, nor did any natives make their appearance this day. We left at 11 a.m., but the strength of the current obliged us to stop and wait the rising of the tide. The second time we stopped at an island, which I named Walker Island. We then explored in the dingy a small creek for about half a mile, and killed some fish with dynamite. We left again at 4.15 p.m., and anchored at dark.—May 28 : With the small supply of wood we had yesterday, we left this morning at 5.30 a.m., having the flood tide with us. We went up six or seven miles, and then anchored in seven fathoms water. It rained in the morning, but the remainder of the day was fine.—May 29 : Left at 6 a.m., with the rising tide, and the wood we used as fuel being dry, we made a run of about twenty-six miles ; at 11 a.m. we had to stop, having exhausted all our fuel. We did not meet any natives. Passed so many islands that it made this part of the river very narrow ; but we had always from five to seven fathoms. The banks at this part were low and flat, but covered with beautiful dense and luxuriant forest.—May 30 : We left at 7 am. and anchored at 4 p.m. at the distance of one or two miles from the last place we arrived at in the Ellangowan. We passed a large island north-east of it, and saw a small village on the mainland, composed of four or five new houses. Some few miles further we observed a few natives, some of whom were armed with bows and arrows. They were laughing and chattering at us, but did not seem to have any bad intentions. Near them, fastened to the bank, were some canoes. I waved some red calico towards them, but they did not or would not notice it, but soon after disappeared into the bush.—May 31 : We started early in the morning, and reached Ellangowan Island, passing on the north side. The bank on the right was covered with dense and luxuriant trees, but on the left vegetation was very scanty, there being only a few lofty trees about the bank, and behind these, as far as we could see, was only an open country of coarse grassy vegetation, and appeared to be swampy and flooded at some seasons of the year. The banks of the river had at this place a very different appearance from what we had previously seen, for it was covered by that graminaceous plant the Coix lacryma. At 3 p.m. we discovered some huts in an abandoned village. We landed and found eight or ten old houses close to the bank, which was at this part seven or eight feet above the level of the water. Following a path through the forest behind the houses, we found a new canoe, which had been constructed on the spot. The ground around was cleared of trees and shrubs, and small trunks of trees were lying across of about two yards one from the other, on which the canoe had to be launched into the river. A similar plan is adopted on the north-west coast of

New Guinea. In the houses I found a stone, some fresh-water shells, fish bones, and pigs' skulls. The houses looked very rudely constructed, and it is very probable they were only used as places for shelter. Close by I observed some small platforms, on which the natives preserve their provisions against the hungry dogs and pigs; such platforms are also used by the natives of Yule Island and Hall Sound. A short distance further on I saw a few more houses, protected by a side wall made of leaves; they were probably used by the women. We left the village at 3.15 p.m., and anchored at 6 p.m., but we did not proceed any distance from the village, the wood we procured there being wet. We had a fine and calm day.

June 1: Left at 8.10 a.m. and anchored at 2 p.m. The engineer reported that, from the quality and state of the wood, we could not go any further to-day. The banks at this part were very low, and covered with long coarse grass, of which the Coix was very prominent, and some straggling trees, which appeared to be a species of acacia. We saw a small channel, and considered it probable that we had anchored on the north side of an island formed by this creek. At this place the river assumes a much more broad appearance, and the presence of a number of aquatic birds suggests to me that we are not far distant from a lagoon.—June 2: We left at 7 a.m., and steamed until 5 30 p.m., when we anchored, during which time we ran thirty or thirty-two miles, advancing somewhat in a northern latitude; but the direction of the river seems to trend to the west. The banks of the river are still low, and are now only covered by Coix and other coarse grasses, or a very poor vegetation; still here and there some clumps of beautiful trees would appear. The acacia was also seen occasionally, but was not plentiful. The bread-fruit tree (Artocarpus) was more common on the banks, and also a species of taro. We also saw a few cocoanut trees, and I observed that those bearing fruit had their leaves hanging over the river cut down in the middle. This, I suppose, was done by the natives, so that they could perceive at a distance which trees were bearing fruit. Also passed some huts, and saw some traps for catching fish at several places on the bank, especially on the left side. A short distance inland we also discovered a plantation of cocoanut trees, and observed some smoke. No doubt there is a village, but we saw nothing of the natives.—June 3: Left at 10 a.m., and anchored at 5 p.m. On three different points a quantity of smoke was seen, and about 2 p.m. we came upon a small grove of cocoanut trees on the right bank. Behind it the ground is a little more elevated, and covered with coarse grass; and a short distance beyond a dense forest was seen. We landed here and got some cocoanuts. About half a mile from the cocoanut groove we met a canoe with a boy, and apparently also a woman. They did not appear to be frightened, but, pulling away, entered a lagoon on the right, and disappeared among the reeds; some houses were seen in that direction. A little further on another lagoon was

seen, about three miles in extent, as far as we could see ; it may be larger, as some portion was not visible for the trees. We met also another canoe with two men, but they soon disappeared among the reeds. I endeavoured to make them understand we were friends, but they avoided all intercourse with us, without evincing any great fear. The country we passed to-day looks much better ; the banks were here and there more elevated, consisting of red clay, and the vegetation was much more luxuriant. —June 4th : We steamed from 8 a.m. to 5 p.m., except stopping at 11 a m. to get more wood. The banks again became low, some of the land being covered by shrubs, and sometimes with coarse grass, among which the Coix predominated. A species of bamboo appeared very abundant at this place. A little before dark, about one or two miles inland on the left bank, some cocoa palms were seen, and probably there is a village, but we only saw a canoe with one native, who took no notice of us.—June 5 : Very early this morning I observed a canoe about three hundred yards behind us, and all our attention was directed to gain their confidence, but all our presents of red calico and bottles, sent down by the current, were unavailing ; they did not notice or seem to care for them, but crossed the river and disappeared among the reeds. A short time after two other canoes, manned by natives, passed the same way without communicating with us. At 6.30 p.m. five large canoes came out from the place where the other canoes had disappeared, with about twelve or fifteen men in each. After looking at us for some time they passed on, making a great noise, and at times appeared as if they would approach nearer. They were in fighting order, as they were attired in their war dresses, and were armed with bows and arrows. I endeavoured to pacify them by sending some red calico, knives, and bottles fastened on a piece of wood, but they did not take any notice of my presents or pick them up. When we raised the anchor the flags were hoisted ; this seemed to alarm them, for they almost immediately ceased shouting and talking, and pulled away. Two chiefs apparently tried to place the other canoes ahead, so as to protect them from any danger. As soon as the Neva moved they began to retreat, but when we turned the bow of the steamer towards them they rapidly fled, still more terrified at the noise from the steam whistle and the report of a few shots from a revolver fired in the air, and they speedily got out of sight, vanishing among the reeds. We continued our course until 4 p.m., when we landed among some old houses on the left bank, which at this place was about twenty feet high from the water, and for the purpose of obtaining some more wood as fuel. To get into the house we had to climb up an old rotten ladder, which was not very safe. The houses were situated along the bank, and were similar to those used by the natives of Yule Island. In the middle of the village was a square place kept cleared from plants and other vegetation, and judging from a painted post, the carving of animals and other devices on the bark of some of the trees, and the remains of animal bones,

it was evident that this place was used as a place of meeting for the people, for dancing or any other public assemblies. The animals carved on the trees were principally reptiles, or alligators and iguanas, which are used as food by the natives, and may be also objects of veneration. Some of the designs were very well executed, and I cut out one of these carvings from the trees representing a human face, very odd and grotesque; the colours used were red, white, and yellow. The bones of pigs and fresh-water turtles were found in the houses, with net bags filled with fresh water shells, &c., the latter stored for the purpose of being converted into lime, which the natives mix with their betel leaf and areka nut. The ground about this locality was somewhat undulating and tolerably dry. Breadfruit trees were abundant and of large size, and taro was growing also on the banks. Our provisions being rather scanty, we had a good supply of fish from the river by aid of the dynamite.—June 6: We left about 7 a.m., and found the river bending very much. Still we got some miles west by north, when the banks again had only a little elevation, but the forest was very rich and luxuriant. We stopped a short time at some cocoa palms, to get a supply of nuts for the crew, who were very fond of them. At 3.30 p.m. we saw an opening on the left, from the north-west, and came upon some places with not a greater depth than one fathom of water; but we soon got again into the proper channel, when we then had from five to seven fathoms of water. Opposite the opening just mentioned there was a muddy bank on the right. At 4.30 p.m. we had to anchor, having no fuel, as we had exhausted all our wood, close to a bank of red clay. The weather was windy, with a little rain, and we got some large fish by aid of the dynamite.—June 7: We did not leave before 10 a.m., and, our supply of wood being bad, were obliged to go very slow, and to drop anchor at a small plantation to procure more wood; left and stopped after a short time, for the purpose of visiting another old village, and found some implements and other articles in one of the houses, which in its form resembles the reception-houses of the south-west coasts of New Guinea—that is, like an overturned boat with a projecting spur in front, the only difference being that it was not built on piles. Part of the bank on which the village is situated has been washed away by the water, and consequently some of the houses have fallen down amongst the *debris*. Some fine banana trees and tobacco plants were under cultivation by the natives; but, judging from the grass growing about the houses, I should consider they had been abandoned, from some cause or other, several months since. Steamed again for a few miles, and then anchored near a tall dead tree in the water bearing the marks of fire, the first seen of any indication of fire since we entered the river.—June 8. Left at 8 a.m., and anchored at 5 p.m., remaining half an hour at another old village. We found that tobacco was cultivated at this place, and appeared to be of excellent quality. Some bags with fresh-water shells and the remains of alligators and fresh-water turtles

were found in the house. We had some rain to-day, but it soon cleared up and became fine again. From stellar observations taken by Mr. Hargrave, we were now in 6° 28' south latitude; by my calculation we are only four miles above. The health of all on board to this day was very good.—June 9: Left at 8 a.m., and the wood being good we were able to steam until 4 p.m. without any delay. We spent the night near the left bank, mooring the Neva to a tree, and using the dingy as a bridge to go on shore from the steamer. The bank was high, and covered with a very rich vegetation of more luxuriant growth than any we had yet seen, and of a deep green colour. During our excursions we met with no natives, but fell in with a young plantation of eleven cocoanut palms, a few huts, and some old landing places. The bank was from six to eight feet above the level of the water, and, judging from the discoloration of the water, and the large amount of snags and *debris* brought down by the current, it is probable that there was very heavy rain about the higher lands of the interior far away from us. It was proposed to give the men a day's rest to-morrow, the first since we left, and also to go on a shooting excursion, as our provision was getting short.—June 10: Went on shore at 8 a.m. with some of the men, and were very fortunate in killing, among many other birds, a noble full-grown cassowary (Cassuarius species), as well as a new species of Goura, or crowned pigeon.* We soon returned to the Neva, with a fine specimen of cassowary and a good supply of fresh meat.—June 11: We left at 6.30 a.m. and anchored again at 5 p.m. By stellar observation Mr. Hargrave made out our position at 6° 20' south latitude; by my reckoning we were four miles more north. The bank was low, but covered with the most luxuriant vegetation and magnificent forest trees. I do not think this place is inhabited, as all traces of natives have disappeared. The men were dissatisfied that the cook did not give them a larger supply of meat, and also asked for an extra supply of biscuits; but I refused, as we have only about 40 or 50 lbs. of biscuit left.—June 12: Left at 8.30 a.m.; but our wood being bad we could only proceed slowly. We passed an island, and then found ourselves in front of some openings, one of which may very probably be another large branch of the river. We landed on the western point, to give time to get up sufficient steam to enable us to proceed. Found an old arrow, and captured a living snake; so I named that point "Snake Point." I did not see any natives, but observed a cutting on a tree by some sharp instrument. We finished this day the flesh of the cassowary.—June 13: Our wood being bad, we did not proceed far this day. The banks were covered with a thick and luxuriant forest. We passed two hills about 200 feet high covered with a dense forest vegetation. The trees were of a rich deep-green colour,

* This new species of Goura has been described very recently by Salvadori, and named Goura Sclaterii, after the Secretary of the Zoological Society of London. There are now four species of Goura known—Goura coronata, Goura Victoriæ, Goura Albertisi, Goura Sclaterii.—G. Bennett.

and amongst them I observed some species of tree fern. We anchored at 5 p.m.—June 14: Left at 11 a.m. and anchored at 5 p.m. We were not able to make much progress this day, from our fuel being bad. It is now three days since we had a glimpse of any natives, but this day we had signs of some being in the vicinity, for we saw three or four canoes fastened to the muddy bank, but could not discover any tracks or signs of the owners, so I suppose the canoes must have been there for some time. The banks at this place were seven or eight feet high. I took a long walk, and found that the forest was very rich, the lesser vegetation beautiful, and the soil very fertile; but in many parts it was exceedingly damp and muddy, and in other places covered with water. I found the sago palm very abundant.—June 15: We were late in making our departure this morning, not leaving until 10 a.m. We had cut a large quantity of wood, but being green we steamed this day very slowly, and were often obliged to stop. The banks as we passed along became of greater elevation, and once we stopped at the foot of a hill. At the edge of the water I observed some yellow sandstone with oxide of iron in it; this supported a conglomerate of flint stone, basalt, and quartz in abundance. Above the conglomerate was red clay and a strata of hard decayed vegetation. I collected several mineral specimens, with one or two fossils. The men washed some dirt for gold, but I do not think that they found any. From the washing I obtained a sample of ferruginous iron sand. The sight of a hill, rock, or stone seemed to animate my people, who no doubt engaged in the expedition in the expectation of finding gold. We met this day canoes in different places, some lying on the banks and one in a creek. On examining this one, I found only some leaves in it and two wretched paddles, being formed only of long sticks with three bits of bark inserted in a cleft at the end and tied with rattans. On the mud I recognised the footprint of a boy or woman. I placed a bottle in the canoe, which I think will astonish the owner, who, I suppose, was not far away. We anchored about 4 p.m. near a small creek, in which I procured some excellent fish by aid of dynamite. Observed several paths in the forest, so I think we are in the vicinity of natives. Palmer had an attack of fever to-day.—June 16: Left at 10.30 a.m., as we could not get up our steam before. We obtained more fish by dynamite. Visited the shore, and shot a specimen of Paradisia apoda, if it should be that bird, which it closely resembles; if so, it is the first time it has been met with in New Guinea. Not far from our starting-point we saw a large rock above the water in the middle of the river, and, trying to avoid it by nearing the right bank, about twenty-five feet high, came upon a large house, and a few natives were seen to run away, armed with bows and arrows. We stopped in front of the house, and then landed to visit the house and plantation, in order to procure food and ethnological specimens, so as to be able to form an opinion of the natives of this part of New Guinea. So far we have not as yet been able to have

any communication with them, from their constantly running away on our approach. I found the house was constructed upon piles, fifteen feet high, very neatly built, but of a different style to any I have seen in other parts of New Guinea. The interior was very clean, and arranged in good order. We inspected everything, and took away with us some weapons, stone implements, and several ornaments, which will serve to show by comparison and examination the race of people inhabiting this part of New Guinea. We procured also some bananas of a very bad quality, but did not see any pigs. In exchange for what we took I left three axes, three knives, six bottles, some red calico, and some handkerchiefs. We returned on board without seeing any natives, and steamed away. Soon after we passed a small island, got into shallow water, and struck the ground three times, but fortunately received no injury; but on steering for the left bank we got again into the proper channel, with a depth of water of two and three fathoms. About 4 p.m. we were obliged to stop, our supply of wood being exhausted. We saw three men and two canoes, but found it impossible to induce them to approach us, for they abandoned their canoes and disappeared into the forest.—June 17: About 10 a.m. we left. After steaming a few miles the water became so shallow (only half a fathom) that we had to stop near to the right bank, where we found one and a half fathom. The engineer went in the dingy to sound, and found the channel continuous at one and a half fathoms on the right hand side, but there was a large snag lying across it. He returned on board at 4 p.m., but too late to proceed any further. We proposed to clear the passage, but we at the same time hoped we should have some rain by to-morrow, and have a greater depth of water. I went on shore and ascended the summit of the hill, 250 feet high. On the top I found a good path along the ridge of the hill, and also visited a small house, which appeared to have been only recently vacated by the natives, judging from the remains of food, and fresh leaves used by them to sit upon. There were some net bags, in which I found some Dammar resin, and also some bamboos for carrying water. The paths at the summit of the hill were very numerous. From the top, in a north to north-east direction, I observed some very high mountains at a great distance, and the land rose gradually in that direction. It was so misty at the time that I found it impossible to determine the distance. In the afternoon I again visited the hill with some of the men. We then obtained a much better view, but not enough to enable us to form an opinion of the true distance, but I calculated they may be fifty or sixty miles distant from us. Very probably it was the great Charles Louis range. The hills were covered with a dense vegetation, on a yellow and red clay soil, to be seen here and there covering a hard sandstone. In the creeks quartz was seen in abundance. John (one of the men) is ill with fever; Palmer improving.—June 18: After the rain of last night we found the water deeper, and left at about 7.30 a.m., but found the current very strong against us.

Had to stop at 1 p.m. for want of fuel, having progressed only four or five miles. The water soon shallowed, and the current was strong against us at the rate of about five miles an hour. I passed nearly four hours rambling on shore, and found the country formed of small rounded hills, from 50 to a hundred feet high. I observed, as usual, in the creeks and gullies an abundance of quartz and pebbles, and the dirt, when washed, gave a large quantity of iron. The forest is very luxuriant, and of semi-tropical vegetation, and the ground was generally covered by a species of Begonia. Mr. Wilcox had an attack of illness.—June 19: Left at 7.30 a.m., but the wood being bad we did not progress more than six or seven miles, and about noon had to delay for the purpose of cutting more wood. Steamed again about 3 p.m., and stopped a short time after at some bread-fruit trees we saw in a small plantation. We proceeded again, and as the water was shallow, having only three feet of water, I gave orders to the engineer to go slow, and to stop when we had only half a fathom of water, to give us time to sound; but he must have misunderstood my instructions, for he went at full speed. The result was that we struck the ground three times and had to stop. The men landed to cut wood, and I occupied myself by rambling about, and found the country undulating and hilly to the height of from 40 to fifty feet. The trees were here growing widely apart, but taller than any I had previously seen. The soil was of yellow clay, covered by a strata of decayed vegetation. Mosses and an apparently new species of pitcher plant (Nepenthes) covered the ground in great abundance. Quartz and sandstone were found in the creeks.—June 19: It was raining all last night and this morning to 9 a.m. Left at noon, but the wood being wet and a strong current against us, we did not go very far. About 4 p.m. we arrived at a plantation on the left bank, where we saw some poor sugar cane and plenty of taro. Anchored to collect some provisions, as ours are all consumed; but I keep in reserve four or five pounds of flour and biscuit, to be used only in case of necessity. We thought we perceived some movement among the grass on the bank, but could not distinguish if any natives were there, or only dogs or pigs. We landed, and found a small house two or three hundred yards from the river, in the middle of a taro plantation. Entered the house, and got some yams and fish, which we found ready for cooking by the natives, and some ornaments and stone implements. Dawan captured a young pig, at which we were all delighted, as we all began to feel the want of meat, We determined to remain here for the night, to cut wood to-morrow (there being a great number of fallen trees) and taro for future occasions. —June 21: We had a good deal of rain during the night and this morning, so that the men did not land to cut wood until 9 a.m. Captured another pig, and obtained ten bags of taro. I found two human skeletons exposed on a platform, and secured them for scientific purposes. I left in exchange for what we took tomahawks, knives, handkerchiefs, beads, bottles, tins, and looking-

glasses. Left at 12.30 p.m., and our progress was slow, the current being strong against us. From passing too close to the bank we were struck by the branches of an overhanging tree, occasioned by the want of care of the man at the helm. I saw in the middle of the river a very singular plant, which only grows in gravel banks in the rivers, serving as a natural warning to voyagers in an unexplored river. I was aware of this, and gave orders to proceed at half speed, and told the man to steer to the left; but my directions must have been again misunderstood, as we went at full speed, and received a severe shock upon the gravel bank. Fortunately we sustained no damage, but had to drop anchor for the night.—June 22: All night and morning we had heavy rain, and although we had our steam up till noon, the current was so strong against us that we resolved to wait until the flood had subsided. Passed the day on shore, which teemed with a most luxuriant vegetation; observed yellow clay and quartz in the creeks. Mr. Hargrave and the Chinaman ill with fever.—June 23: Left early this morning, and after steaming a few miles, came upon two branches of the river; took the right branch, being the largest, but not of a greater breadth than fifty or sixty yards, the depth of water being almost constant, from two to three fathoms; but we had not proceeded very far when we came upon a gravel bank in the middle of the river, and found that we had suddenly shoaled to half a fathom of water. The Neva got aground, and the force of the current sent her on her beam ends, and we fully expected she would capsize. Sounded in the dingy from bank to bank, and found only half a fathom, with a gravel bottom. At last found one fathom close to the river bank, where we anchored, expecting by waiting the river would rise with the rain.—June 24: We had no rain, so the shallow water still continued, and we were obliged to remain; so I spent the day in shooting, and traversed some miles of country, which I found hilly, and the hills becoming more elevated as we passed inland from the river. Still I did not see any mountains. The height of the hills seen and ascended averaged from 300 to 400 feet. Observed yellow clay, green sandstone, and the usual quartz pebble in the creeks. This place afforded the greatest interest to the naturalist. On the top of one of the hills I found a small house, in which I discovered some arrows and stones used for cooking food, some flint implements, and some cassowary bones. Although the house was small, there was a division in the middle for a separation of the sexes. We had some rain during the day. Mr. Hargrave had a slight attack of fever.—June 25: Abundance of rain last night, and the river had risen this morning, with a strong current. We left at 9 a.m., but in two hours did not make more progress than one or one and a half miles. Notwithstanding we took every precaution, we got twice aground, but did not sustain any damage. At 11 a.m. started for the third time, but the current drove the Neva against a snag, and we sustained two or three shocks, and were nearly capsized, and lost from the roof a valuable collection of living

plants, together with some skulls and skeletons of animals which were stored on the roof for want of room inside the steamer, and also some yards of canvas which got entangled in the screw and rudder, so that we could not move. The anchor was quickly dropped, so that we should not be carried by the current, but it placed the Neva on a gravel bank, lying over on her side, and much water got into her. We made every effort to get her afloat again, but were unsuccessful. As the flood subsided the Neva remained on the now dry gravel bank all the day. At 8.30 p.m. the clouds were heavy with rain, and every appearance of a thunderstorm; so we remained, in hopes that a heavy flood would relieve us from our unpleasant position.—June 26: Heavy rain last night. The river was rising, but at 6.30 p.m. our position had not improved. It appears to me and to all, and especially to Mr. Hargrave, that we cannot proceed any further in the Neva, who advised me when we floated again to return. I requested him to write his opinion in my log-book, which he did as follows: "Mr. D'Albertis asked my opinion about the possibility of the Neva proceeding up the Fly River. I said she cannot. The current is six or seven knots, the channel narrow, the eddies make the rudder useless.—Law. Hargrave." From 6 to 8 a.m. the flood rose a little more, and we again tried to float the Neva, but without success, and she remained this day on the gravel bank. Two men on the sick list.—June 27: This morning, about 1 a.m., the water again rose until 6 a.m., when I sent some men in the dingy to put an anchor astern, in order to try to get her off the gravel bank on which she had been fixed for the last two days. By the carelessness of one of the men, the point of the anchor struck the dingy and damaged it so much that we had to defer any attempt to relieve the Neva, as the dingy had to be put on shore to be repaired. The flood having subsided, the Neva remained dry on the bank, still on her beam ends. I went up the country with some of the men about six miles, and crossed some swampy flats and some very stiff hills, and followed the course of the river, in some places only twenty-five or thirty yards wide, and very shallow, with here and there gravel banks similar to those on which the Neva is grounded, and which is composed of pebbles of quartz, basalt, limestone; and I also found some fossil plants, coral, and a fossil scapular bone of a turtle. The fossils appear to me to be representant of still living species.—June 28: There was a very heavy flood last night, and this morning we were delighted to find the Neva in her normal position and afloat. The current of course ran very strong, so much so that it would have been imprudent to venture further up the river. It was, therefore, with much regret that I came to the determination to return, as I found it would be impossible to take the Neva further, as at low water she was too deep, and at flood she had not sufficient power to stem the current. To abandon her, and to go on the land journey, it did not appear to me to be wise to attempt it, nor would it be possible. We reckoned that we were now in

latitude 5° 30' south, and longitude 141° 30' east, so that if the men could be induced to accompany me, from this place the distance to be traversed in a straight line to Hall Sound would be about 400 miles; and I never at any time entertained the idea of crossing the land at a greater distance than 200 miles. The crew are also much exhausted by work, sickness, and a want of constant supply of nourishing food, so that I think nothing would induce them to volunteer to follow me overland. Not only this, but we have not yet reached the mountain range, and the only mountains we saw were in a northerly direction, and had we landed, our course would be east by south-east, with the prospect of having to travel over a flat swampy country; for such a distance seemed to me an impossibility, particularly in a country like New Guinea, and without any means of carrying even our ammunition. So I gave orders to return, and the current took us in a few hours to the plantation from which we got our taro on the 20th instant. This course was also required, for we had finished all our provisions, and could find but little game and no fish. We landed here again, and got as much taro as, I consider, will last six or eight days; so that I hope to be able to go and examine the large branch of the river we have seen at Snake Point. We were surprised to find that the natives had not returned to the house, for I found all the articles I left there untouched. The soil is very rich at this part, and covered with a luxuriant vegetation. A nutmeg (myristica) tree was very abundant, bearing a large and eatable fruit. The land was flat on the left bank, and hilly on the right. We remained here for the night to cut some wood for to-morrow.—June 29: At 9.30 a.m. we left the place and passed down rapidly, aided by steam and the current, to the house we visited on the 19th instant. Some natives appeared in front of the house, and seemed ready to prevent our landing. They sent three arrows at us, but they did not reach their destination. Mr. Hargrave and myself fired some shots and made them go away; but one came down to the bank, and under shelter of the shrubs, thought to send us some of his arrows, but a discharge of a gun at him with game shot soon made him retire. We also fired three or four shots at some distant canoes to prevent them from approaching us. We then landed with the hope of finding some pigs, but could not seeany. I then visited the house, and a shocking sight met my gaze In the back room there was lying an old blind woman. Only a thin diseased skin covered her bones. She was still alive, but evidently dying fast. The fore part of the skull was broken, and the brain protruded, covering her grey hairs. On a careful examination, I found that the wound had been made by a cutting instrument, and we afterwards saw some marks of blood near the door and on the ground in the direction in which we had seen the natives running away. Probably the natives thought it better to kill her than to allow her to fall into our hands, or probably because she was helpless and diseased. Some few miles below the village

we saw a canoe with two or three people in it. When they saw us they hurried on shore, leaving the canoe. On examining it we found it was full of sago. We took it with us, and considered we were fortunate in securing food for about a fortnight by far superior to the taro we had been living upon for so many days, and left in exchange some trade, as calico, axes, beads, &c, &c.—June 30: Left at 9.30 a m., and although the current was in our favour, we did not go very far, as the wood was too green. When we arrived at Snake Point, I gave directions to enter the western branch of the river, which I named Alice Hargrave River, after the wishes of the Honorable the Secretary of N.S.W. Many on board were disappointed at this arrangement, as they expected we were returning homewards. The natives of Katow, Maino, Waruki, and Darwan grieved and cried out at this change, and I at last pacified them by a promise of an increase to their wages, so they became consoled. We anchored at 5 p.m., four or five miles from the entrance. At first we found shallow water, and had some difficulty in finding the channel, which is from three to five fathoms deep. On my return from the Fly, I made another chart, in order to correct any errors that might have occurred when going up, and I was pleased to find that one agrees perfectly with the other; but great accuracy could not be expected with my appliances. From the great rising of the water to day, we could recognise with difficulty many of the places we had marked as important points; and some, noted in my chart as muddy or red bank, &c., had entirely disappeared.

July 1: We steamed this day from 9 a.m. to 4 p.m., and then had to stop, from our wood being exhausted. We got up about fourteen miles. We had a constant depth of water of from four to five fathoms, and only got out of the channel a short time after we started. The soundings gave us one and a half fathoms, but nearer to the right bank we again found five fathoms of water. We saw some old native houses, and a raft rudely constructed of two trunks of trees. For the first seven or eight miles the land we passed was very low, and covered with scanty vegetation. Reeds were abundant, and the general appearance, more especially on the left bank, was very swampy. We then passed a point where the bank is about twenty-five feet high, but it soon decreased as we passed on to five or six feet, and the vegetation became very rich and luxuriant. It appeared to be raining not very far from us.—July 2: There was nothing worth noting this day. We steamed to-day from 9 a m. to 5 p.m., and had a depth of water of from three to five fathoms.—July 3: Gave rest to the men, some of them not feeling well, and, not being well myself, remained on board; others went on a shooting excursion, and returned on board with some interesting birds. They informed me that during their excursion they found several native paths, and a trap for catching pigs. —July 4: Although I felt ill to-day from a bad attack of rheu-

matic fever, I proceeded, to avoid loss of time, so we left at 8 a.m. Passed some old houses, some creeks, and two small islands on the right, and a smaller on the left. At 3 p.m. had to stop on account of shallow water. Palmer and the Chinaman are both very sick, and I feel so exhausted that I can hardly stand. —July 5: Remained the whole day at anchor, the water being low. Some of the men landed, and went on a shooting excursion. In the morning five or six natives made their appearance on the left bank not far from us. They did not evince any surprise, but merely curiosity; and after laughing very much, one of them turned his back and gave a slap upon his hip, as an insult (such an act is considered an insult in other parts of New Guinea.) We replied by sending a rocket close to them, which made them disappear into the bush. I feel much worse, and three of the men are lying down with fever.—July 6: Rain last night, and deep water this morning, with a very strong current against us. Left, but could not proceed further than a mile, or perhaps less, and anchored at the foot of the left bank, which at this part was about thirty feet high. Here was situated a small village of three or four houses. Being too ill, I could not go myself, but it was reported by some of the men who visited them that they were built very high on piles, and one of them, which was supported by a tree, was about fifty feet from the ground. All round the houses the ground has been cleared from trees, and cultivated by the natives. My men found the houses deserted, and carefully shut up. Went inside, and found everything had been removed. A short distance beyond they found another large but old house, and some banana trees, from which they gathered some fruit. They also brought on board some two or three stone implements they found, which had apparently been forgotten by the natives. I was fortunate in obtaining the skeleton of a boy, which was brought on board by Mr. Hargrave. After replenishing our stock of wood, we again tried to stem the strong current, and twice we failed, being driven back by the current to the point from whence we started. The engineer considered it impossible to proceed further. I requested him to give me a written statement to that effect which he did as follows:— "On the 6th of July I tried twice to steam up the second rapids of the north-west branch of the Fly River and failed. Mr. D'Albertis asked me if I could steam further, I said 'No;'— Law Hargrave." After our experience on the other branch of the river I considered it would be useless to make any further attempt, so I determined to return to-morrow and anchored below the village for the night —July 7: Early this morning the men went to cut wood, and also succeeded in killing two fine pigs. I was thinking of making another attempt this morning, but I found John, Palmer, and Jackson very ill with fever, and, although a little better myself, unfit for work, so gave directions for our return, and in a few hours we were carried down by the current, and again anchored in the Fly River, at about ten miles

from Snake Point.—July 8: Many being sick, we rested all day and cooked our pigs.—July 9: From 7 a.m. to 3 p.m. we steamed down about sixty miles, and then had to stop to cut wood. Sickness still on board.—July 10: Steamed fifty miles down to our anchorage of the 5th of June.—July 11: Left at 10 a.m, but the anchor got hold of a log, and so not to lose it we had to work carefully to extricate it. We succeeded after three hours of hard work. We then proceeded to some new huts or shelters we saw on the left bank. There were also some canoes. Visited the huts and found some bows and arrows and a fine large paddle. Did not see any natives, as they were probably engaged in collecting sago in the bush, or may be occupied in a hunting expedition. I am much better, but Jackson, John, and Palmer are still down with fever.—July 12: Left this morning, after getting our supply of wood, and about 1 p.m., arrived at the cocoanut grove we had previously visited, and stopped to get a supply of nuts. We discovered a village about half a mile distant with many natives, who did not appear to be aware of our presence. I was desirous of paying them a visit, and returned with the Neva a short distance back to the channel, where in our ascending passage we observed a canoe pass in through the reeds; some of us went in the dingy, and with difficulty found the channel, which was obstructed with reeds and aquatic plants for about three-quarters of a mile, we then landed and found we were not nearer the village than when we were at the cocoanut grove, but still saw the natives in the village; we returned to the Neva in the hope of finding another passage to the village. A canoe appeared with two natives, and soon disappeared again, close to the cocoanut palms, we followed them in the Neva, found the channel they had taken, and went in the dingy. We soon found ourselves in a small lagoon, and saw a few men escaping from the village, where we landed soon after. The houses are on a small dry spot at the end of the lagoon, and in the middle was a plain covered with coarse grass, behind was a dense scrub. We succeeded in killing one pig and capturing another alive. When engaged in examining the houses, three canoes with natives (women only) approached the village at a distance of 200 yards, we went to see the new arrivals. For a little time they did not notice us, but soon they stopped pulling and looked as if our appearance was something beyond their comprehension, and then finding we were strangers and of a novel kind, they pulled away in great terror before we had an opportunity of conciliating them, and disappeared behind a low hill. We got in the village some bows and arrows, human skulls preserved and painted by the natives, and some other articles. My men got a quantity of tobacco and sago. From the large quantity of tobacco we saw, and the large marine shell used by the natives for ornament, I believe that these people grow tobacco, and trade with southern tribes, bartering it for shells.—July 13: This morning revisited the village with the hope of securing some more pigs; found a

stuffed human head, the skull having been previously removed. I brought it away; and, in return for what I had taken yesterday, I left handkerchiefs, tomahawks, knives, hooks, beads, and calico. Observed a number of ducks in the lagoon, and succeeded in killing some of them. Left about 8 a.m., and soon after we saw nine canoes, four of them containing a number of men well armed and wearing the usual war ornaments; in each canoe there seemed to be from fifteen to twenty warriors. The other five canoes contained but few men, who appeared to be unarmed, and remained at some distance from the others. It was sufficiently apparent that their object was to attack us, but their ardour diminished very much as we approached them. I made every endeavour to assure them that our intentions were friendly, waving calico, &c., but without success, so I gave the order to run the steamer at full speed to divide the war party in the middle, so as to leave the unarmed canoes up the current on our right, and the armed canoes below the current. As soon as they saw this, the unarmed canoes stopped, and seeing the others retreating as fast as they could paddle, went on laughing heartily. As soon as the canoes with the warriors reached the shore they deserted the canoes with their arms and provisions, and disappeared in the forest. We boarded the canoes and found and appropriated plenty of sago, some fish, a living turtle, and some thousands of arrows, for which this time I did not pay anything. On going down the river we observed some more canoes, but they did not wait for us but went into some of the creeks.—July 14: Passed Ellangowan Island; and at 5 p.m., reached 37 miles distant from it.—July 15: We steamed from 8.30 a.m to 5 p.m., but we got on shore at 1 p.m., and it was some time before we got afloat again. At Howling Point we saw many natives on the opposite bank, as well as canoes; tried to attract their attention by friendly signs. Some of them entered the canoes, and we slackened our speed, thinking they would come to us, but they appeared to get alarmed and pulled away.—July 16: Rested the men this day; some went on a shooting excursion, but with very poor success.—July 17: We left early, and at 3 p.m. anchored at Kiwai Island, at a village named by Maino, Auti. The inhabitants of Kiwai are on very friendly terms with the people of Moatta (Katow); at this place Maino passed some years when a boy, and one of his wives lives here. We bought a quantity of yams, taro, and cocoanuts, and a pig. I also bought twelve human skulls from a heap I saw in the verandah of a large house. We visited one of the large houses, but the natives did not like us to go inside. The women and children had left the village. The house was very large, and kept very clean, and could accommodate 300 people. The dim light of the interior, and the peculiar form of the building, conveys the idea of an old Gothic church. I saw a fine tame hornbill in the village—a female of Buceros ruficollis, or the red-necked hornbill. I wished to purchase it, but the natives said they could not catch it, but would

procure it for me by to-morrow.—July 18: Sent the men on shore to cut wood, and also a large knife and a red blanket to purchase the hornbill. On the return of the men, they said the natives were willing to sell the bird, but could not catch it. I did not believe this statement; so I sent three rockets in the direction of the village, and then Maino went for the promised bird, and he returned with it upon his arm.* Some canoes came with natives to wish us good-bye and to shake hands. We had met them before; some canoes also came off from the village where I had stopped when in the Ellangowan, bringing cocoanuts and yams, but demanded too high a price for them Left at 10.30 a.m. to go to Mibu Island, to shorten the distance, so that we might in one day go from that place to the Kataw River, and land our pilots at their village, Moaita; anchored east of Mibu Island at 1 p.m. Strong south-east breeze. The health of all on board is very much improved, no doubt from having a good supply of meat.—July 19: Strong wind all night, and the steamer rolled very much, and shipped some water. I shall not go to sea yet as it is too rough for a boat like the Neva.—July 20: Passed a terrible night from the heavy rolling of the Neva, and powerful wind and sea, with the danger of the dingy's getting destroyed against the stern of the Neva; took the advice of Palmer, the only true sailor on board, who advised me not to venture the passage with such a rough sea and strong head wind; gave orders to get up steam and to go and find a safe anchorage, and wait for more favourable weather. Maino suggested a channel which divides Mibu Island into two parts, forming two islands. We entered this channel and found from five to seven fathoms depth of water; went out on the other side west of the island into the passage formed by Mibu Island and the main land of New Guinea, considering that it may be possible by this way to get to Bampton Island (or Parama of the natives). Steamed south for this island, but soon arrived abreast of the south end of Mibu Island; found the sea was too rough to proceed and anchored at the southern point of Mibu. The steamer rolled very much, and we did not anticipate an agreeable night.—July 21: We had a miserable night, with very bad weather, and the rolling of the steamer was very heavy, and the dingy struck several times the stern of the Neva, and caused a little damage. The rough weather continuing this morning, I got up steam and went, directed by Maino, to find a more sheltered place in one of the channels dividing Mibu Island. The one we are now in is 20 to 30 yards wide, and with two or three fathoms depth of water in the middle of the passage; the banks are low, muddy, and swampy, covered by mangroves and the nipa palm, as well as an abundance of cocoanut palms. Waruki and Dawan crossed the island, and returned with some natives of Kiwai, who were on a

*This bird is now in Sydney alive and in good health. It is the celebrated "big bird" of Mr. Stone.

visit to this island, and bought from them cocoanuts, yams, &c.—July 22: We had a much worse night than the preceding, for on the tide changing we found ourselves across the channel with the bow in the middle of the water and the stern on a dry bank. We set to work to get her out of this dangerous position, but when we succeeded we got in a worse state, for the strong current carried her on the opposite bank, on which we remained so fixed in the mud in a very inclined position that she could not be moved. The tide was falling all the time, so at last the Neva was lodged on a slippery mudbank and nearly capsized and was only prevented from overturning and ending her career in this place, by the old roots of Nipa palms prevented her slipping and capsizing entirely. At daylight it was dead low water, and I sent on shore everything I could get out of the Neva. As the tide rose the water entered the vessel and four men were employed in baling the water out. We succeeded at last by great exertion to get her afloat again. None of us are expert seamen, but every precaution is taken to prevent accident. Our provisions are getting short and water also, and if the wind does not subside we shall have to depend upon the natives for our supplies.—July 23: No change in the weather. The natives and some of the men crossed the island, and saw the sea on the Kiwai side, and found it very rough. Last night we dragged the anchor, and this morning found we were some hundred yards from our original position, and at low water had only half a fathom; returned to our former anchorage, and took every precaution to prevent a recurrence.—July 24: The night has been nearly calm, so we steamed out thinking to be able to reach Parama, but in the morning the wind freshened, and we had to stop again. I directed the steam to be ready by 4 a.m., so that if the night should be calm we might start and reach Parama before the strong breezes set in.—July 25: The night had been calm, but we were not ready to start before 6.30 a.m. The strong wind came on as the sun rose; we made an attempt to go but failed, for out of Mibu it was too stormy for an open boat like the Neva. As it was, we shipped three seas, one after the other, with some damage to the stores and collections, and likely to be followed by worst consequences, so we returned to the channel first pointed to us by Maino in sight of Kaiwai, and anchored. I sent Dawan and some men in the boat to buy a pig and some yams at Kaiwai. The natives were unwilling to sell, but Dawan pointed out to Bob, one of the men, a fine pig, and told him to kill it. This being done, he afterwards paid for it with a large knife, a blanket, a crimean shirt, and a pair of trousers.—July 26: A fine day and calm, but a heavy swell on the sea from the gales on the previous days. When the men were on shore to-day with the pig, some natives arrived, and, seeing the dead pig, began crying out, but when Dawan told them it had been well paid for they were satisfied, and went away in their canoes to the village at Kiwai to secure the price which was left in the hands of others for the proprietor.

—July 27: Rain during the night. Left at 5 a.m., but we had to return to our anchorage. Maino got so alarmed at the sailing qualities of the Neva in a rough sea, that when we arrived at our anchorage, he requested to be put on shore, telling us he would never again expose himself to so dangerous a position, so I had to promise that I would not again leave except the day was calm. It rained to-day, so we filled our casks with fresh water.—From the 28th of July to the 1st of August, detained by the weather, living on game and some yams purchased from the natives.

August 2: Calm night. Left at 5.30 a.m.; Dawan did not come on board, so I left him behind with his friends. We arrived at Parama Island, passed in the channel, between it and New Guinea, attempted to go as far as Yarru, but out of the channel we found shallow water, and the wind was too strong and the sea too rough to proceed, so we turned back and anchored in the channel between Bampton or Parama Island and the mainland of New Guinea. Sent to buy provisions at Wighi, a village on the mainland opposite to Mibu, where they obtain yams, bananas, and cocoanuts. We have now ascertained that there is a passage from Bampton Island to Kiwai by the mouth of the Fly River west of Mibu, and it is probable that a future survey may discover a channel for larger ships. Two men attacked by fever this day. Dawan joined this day, coming in a native canoe.—August 4: Left at 9 a.m. for Jarru, and Maino proved to be an excellent pilot. Except on two or three occasions we had always two or three fathoms of water or more the nearer we approached to Jarru. So here also a channel might be found for vessels larger than the Neva. We had no accidents this day, but I am certain that we cannot go to sea with a head wind and rough sea in safety, so I do not intend to attempt it any more.—August 5: Remained at anchor all day, and visited the little island, where we found it had been used as a station for beche-de-mer. The island is well covered with shrubs and grass, and an ample supply of fresh water. The island seems formed of yellow and green sandstone with oxide of iron lying in strata, and forming a base to the yellow, reddish, and blue clay. The western part of it is swampy and muddy and covered with mangrove. I found in a creek an abundance of fish, birds were also plentiful, so we had a good supply of fish and game.—August 6: Remained at anchor and got a good supply of birds and fish.—August 7: Left at 7 a.m. for Katow, passed between the main land and Jarru, arrived at Katow, entered and anchored in the river at 10.30 a.m. So this day we had completed our passage from Mibu to Katow, passing inside all the islands close to the mainland, saving many miles than by the passage south of Bristow Island, Bampton Island, and Mibu. If a deeper channel could be found no doubt this will be the best course to be adopted for the Fly River. I asked Maino before he landed to sell or to get some one to sell me a pig and I requested him to send on shore for the pig. He held a long conversation with his wife from the steamer to the shore who

seemed opposed to selling the pig. At last Maino spoke very decidedly, when the pig was brought, paid for, and killed; and Maino landed with his luggage and suite to his great satisfaction. —August 8: This morning Maino sent us a present of taro, and we purchased from the natives some bananas and cocoanuts. I asked Maino to send some provisions on board so that we might have at least five days' rations on board, so that if on leaving we should be detained by the weather at some uninhabited island we should have sufficient supplies, but the natives did not bring any, so when it was dark I let off some rockets, with the hope that to-morrow the natives would be better disposed.—August 9: The rockets had the desired effect, for early this morning natives came with yams, taro, and bananas, which we purchased with tobacco, which we found the best article for barter at this place. Two men ill with fever.—August 10: More natives come to-day to sell provisions, but one demanded an axe for a cocoanut, which I refused. I was told by Dawan that the women and children left the village when they saw the rockets. I told him they had nothing to fear, but at the same time they must understand that they must sell me some provisions to feed my crew. After he left women and children were seen returing to the village.—August 11 to 16: Strong gales and heavy seas prevailing, could not leave, and had some difficulty in procuring food for all the crew, but what with pigeons, megapodius, and cockatoos, parrots, and fish, and a few bananas and taro from the natives, we were not *exactly* in a starving state.—August 17: The weather more moderate, if we had provision on board we might have left. This afternoon Waima, another chief of Moatta, came on board and asked a blanket, shirt, trousers, and a large American axe for a pig. I consented and sent the men to the village to get the pig, when Dawan suggested to the chief to ask for a gun instead of the other articles he had proposed, so the men returned without the pig, and I was angry with Dawan for his interference.--August 18: I went on shore early this morning with four men to the village to inquire about the pig. Dawan appeared, and after much altercation a fight appeared imminent, but by threatening to fire rockets, I kept the natives at a distance. Maino came and said I had to send a man to kill the pig, as it could not be held; but fearing for my men, I asked to see the pig first, which, after a little delay, was driven to us, killed, and paid for amidst great shouts of laughter among the natives. Dawan had fled into the bush frightened. We all parted friends as before, and Maino told me not to take any notice of Dawan, who was one of those "who talked much, but thought little." The pig was afterwards carried to the dingy, followed by about 100 natives. I threw some tobacco among them, and the struggle amongst the crowd to get a piece of this, to them precious commodity, caused a good deal of laughing, and good humour prevailed among them. I bought from a native two human skulls taken by him from a bundle hanging in the front of the house of the young men. The natives have promised to supply

me with all the food I may require, but I do not place much dependence upon them.—August 19 : At 3.30 a.m. we were ready to depart, but having been told it would be dangerous to leave in the dark, I waited for daylight, but the wind increasing very much I was obliged to put off our departure.—August 20 : The weather still very bad. As the natives brought no provision for sale, I sent the men to get some bananas from a plantation. Some natives from the interior are soon expected at Moatta with sago. One of the men sick.—August 21 : About two hundred men and women from the interior passed this morning in sight of the Neva, going to Moatta with sago, exchanging it for cocoanuts. They left again soon after, but none could be induced to sell any to us or to come near. I observed the women wore the small grass petticoat, as at Yule Island. Mr. Wilcox ill.—August 22 to 23 : Still detained by the state of the weather.—August 24: The weather being sufficiently calm, I left at 5.30 a.m., but we soon struck on the left bank at the mouth of the river, and did not get afloat again until past 10 a.m., when we had to go back.—August 25 : As we could not start early I deferred it to the next day.—August 26 : As early this morning we had only a steam pressure of 22 lbs., I would not leave until it had a pressure of 40 lbs., which occasioned some loss of time, and with a receding tide I directed the course, and considered we were almost out of danger, when we found we were in only half a fathom of water. I gave orders to stop, but by some accident the rope of the boat got entangled in the propeller, which caused some delay to cut it. In the meantime the wind and the current sent us on a sandbank, on which we struck so hard as to be unable to move, and ran a great risk of filling with water from the heavy breakers ; on the tide flowing we again floated, but, being too late to leave, we had to return.—From the 27th to the 1st, the weather was too tempestuous to leave, and some difficulty in purchasing food. The men were, however, very successful in procuring a supply of game.

September 1 : Nothing particular to mention from this day to the 5th, except the difficulty of purchasing a sufficient supply of food from the natives ; but this day two of the pearl shelling boats called here, and we were glad to get some biscuit and rice from them.—September 6 : The pearl shell boats left this morning ; we followed them, but as soon as we were out of the river, we found that what was fine weather for the decked boats, was bad for an open heavy steam launch, and Palmer advised me to return, notwithstanding he complained a good deal of our long detention at this place.—September 7 : Finding that every day I was exposed to new difficulties respecting getting a supply of food for the crew, I considered it advisable to send the boat to Brother's Island to ask for some supply of provisions from Captain Redlich, who has a beche-de-mer station on that island. I expressed this proposal to the men, and they agreed to it, so that four of them will start at 1 a.m. to-morrow —September 8 : As arranged last night, the four men left about 1 a.m., and we were not a little surprised to

find Captain Redlich calling at Katow in the afternoon. He will sail again to-morrow. I requested him to take six of my crew to Somerset, whom it is my intention to discharge, from the difficulty of procuring food for them, and they also expressed a wish to leave. Captain Redlich consented to take them, and he left at 2 p.m. on the 9th of September for Somerset, with the engineer and Jackson, and the other four he will take from his island where he will find them. Wrote to the Rev. Mr. M'Farlane to pay the men and discharge them before the Police Magistrate at Somerset, Mr. Wilcox, Bob (a South Sea Islander), and the cook (a Chinese), remained with me.—September 10 : I felt relief to-day, as I am now quite independent of the natives for food having but few persons on board. Eight native canoes, Waruki informs me, are fitting out for a fishing party to leave to-morrow.—September 11 : All the people of Moata, except two or three families, left this morning on the fishing excursion.—September 12 : About 6 p.m. I saw a sail, it was our dingy returning from the Brother's Island, they reported that they got no provisions as Captain Redlich was absent. I told them what occurred in their absence, and they accepted my advice to return to Brother's Island, and that Captain Redlich would take them to Somerset, at this they were very delighted and would not stay the night but left again immediately. They gave me the news of the murder of Dr. James, at Yule Island.—From September 13th to 17th nothing of particular interest, except that this day, for the first time, a canoe with women came near the Neva to sell cocoanuts.—18th : The canoes returned from their fishing expedition.—On the 22nd, some canoes that arrived from Kiwai some days ago, with sago, are returning, taking with them some young banana and other plants. —On the 23rd, in the morning, Moatta village was in a state of alarm, and all the men had left the village to repel an attack from some inland tribe. I observed, however, that the women passed near the Neva, going to their usual work. About 4 p.m., I saw the natives returning, and they seemed to be carrying a wounded or dead man. They would not permit Mr. Wilcox to enter the village, but told him they did not fight, as the bushmen ran away as soon as they appeared.—On the 24th Captain Redlich arrived, bringing me provisions and letters, and returned on the following day.

From September 25th to October 4th, nothing has occurred worth mentioning, except that the Moatta people being now friends with the inland tribes enabled me, with the assistance of the tobacco I received from Somerset, to purchase specimens of natural history from them. On the 5th a large canoe arrived from Wighi.—October 6 to 15 : Nothing of importance. On the 16th some natives from the interior visited Moatta to-day, in order to purchase fish, giving in exchange sago and bananas. Five canoes also arrived from Wighi; there was a man with them who had a gun and spoke English very well, and two others armed with clubs; they wished to come on board; I would not allow

them to come armed on board, as it is not the usual custom among natives. So I told them to go away, which they refused to do for some time, until I took my rifle. Bob, at Tureture, met the same man; it seems that he has been to Sydney on board of one of the Pearl Fishery vessels.—October 17: Finding that the weather was breaking, and likely to be fine and calm, we put the Neva in order for leaving. From the 18th to the 29th, nothing worth mentioning, except that two pearl-shell boats came for provisions and water; a white man was in charge, but they had to go four miles distant for fresh water, and the natives and ourselves could only obtain it from the same distance. The Moatta people are much annoyed at seeing the inland natives receiving so much tobacco for animals, &c., and they have tried to prevent their coming, and even threatening to fight them.—October 30: The natives say the weather will now moderate and be fair, so I shall make every preparation for taking my departure for Somerset.

November 1: A boat arrived to-day with two native teachers—Lochat and Elia—from Cornwallis Island, sent by the kindness of Mr. Macfarlane, with a letter. They told me the weather was fine and calm, and would continue so very probably for a few days. They left again in the afternoon. I shall leave to-morrow if the weather continues fine.—November 2: One of the inland natives brought me this morning a beautiful snake of a species I had never seen before. Left at 10 a m, and on arriving at the entrance of the river found the weather fine, and steered for Cornwallis Island with a gentle breeze, and aided by our jib sail went at the rate of six miles an hour; passed north of Saiba, and anchored at Cornwallis Island at 4 p.m. The two following days we occupied ourselves in getting a supply of wood and water on board, in which the teachers aided me by lending their boat with two boys. On the 5th I attended the service conducted by the native teachers in their little church. about one hundred natives were present—men, women, and children; almost the whole of them neatly dressed; they seemed very attentive to the service. A great number were from Saibai. I am not capable of judging of the influence of the teachers in a religious point of view, but from the benefit derived from their moral influence the result is very satisfactory. The advance of the natives of Saibai in civilization is progressing very fast, and the London Missionary Society may be proud of two such new teachers as Elia and Lochat, who are eminently qualified to reform the wild tribes and to prepare the ground for future settlement.—November 6. The wind being fresh, and our anchorage not safe, I left for the Brothers Island, and arrived after a run of six hours. The passage was not pleasant, for the wind was fresh and the sea was rough, but I knew there was no danger of rocks or shallow water during the passage. The men had to bale the water out, and it was with some difficulty that it was kept from rising to the furnace and putting out the fire. On the following day (7th) Bob, the South Sea Islander, made a raft to go on shore to look for the

dingy, but he found that Captain Redlich had removed to Pumpkin Island, and as Bob did not see the dingy, it was probably taken to that Island. It is blowing very hard but our anchorage is safe. —November 8: Bob went on shore and made such arrangements as would enable us to get on the island to cut wood and obtain a plentiful supply of fresh water. There are no natives on the island. The wind still continues to blow very strong. On the following day again landed to cut more wood, and obtained some birds. The Chinese cook was bitten by a snake of a poisonous species, and the symptoms in less than ten minutes were very alarming. I incised the wound, allowing it to bleed freely; applied ammonia, and gave brandy and ammonia internally. The next day (10th) the cook was much better; but he was very ill during the night, but on the following day (11th) he was so much improved that I considered him out of danger.—November 12: The weather being fine and calm, left the Brothers Island at 10 a.m., and anchored at Mount Ernest, where Mr. Jardine has a station. The next day was windy, I started for Somerset, but was obliged to return after going a few miles from the stormy state of the weather. This morning (14th) I left the Neva and went on board a boat going to Somerset, and on the 20th returned to the Neva. The wind during my absence had changed to the north, and the anchorage on the north side being unsafe the men had shifted anchorage to the north of Mount Ernest Island. On the 21st it was calm all night, and we left early in the morning for Somerset. An accident happened to the engine by the bursting of one of the tubes, so I was obliged to cease steaming, but it very fortunately happened when we were only three miles from Somerset, when, by aid of our sails and the current being in our favour, we soon anchored at Somerset. I left the Neva at Somerset, when I departed for Sydney, in charge of Bob, under the control of Mr. Powell, the Post-master, who kindly promised to see that the Neva was put in good order, cleaned and painted.

After my long narrative, I shall conclude with a few words, expressing my regret at not having been able to do more; but it is not the pioneer who shows the way that attains the most glory, but often the one who follows him; and it is easy to hear of a road, but very difficult to find it out. I wish every success to any explorer of this part of New Guinea (should I not be able to return and complete my work) and I hope that the little I have done will be some guide, and enable him to find his way more readily than I did mine, and avoid any errors I may have made. By this exploration we are now aware of a road to the interior of New Guinea, which is of more importance, as it is so near to Somerset, where a line of large steamers call twice every month. We also found a new passage from Moatta to the Fly River, shorter and safer than the one previously known, and when properly surveyed may be found navigable for larger ships. The richness of the land we visited, its vegetable and, probably, mineral productions, the soil suitable for many of the most valuable plants,

as coffee, sugar, cotton, india-rubber, sago, tobacco, nutmeg, &c., ought to attract the capital of the colony to open up the country. The Dutch in their part of New Guinea, although on a small scale, derive some trade; and the part of New Guinea into which we penetrated was in latitude 5·30 South, and ran about 500 miles on the winding river, the course of which may be seen on the chart appended, and it almost forms a line of demarcation between that part of New Guinea claimed by the Dutch and that remaining as yet unclaimed by any nation. About the Fly River, as far as I could judge, the natives appear less numerous than I have seen in other parts of New Guinea, and the land is cultivated in a smaller quantity, so that in this part of New Guinea the settler will not find the same difficulties I pointed out on former occasions when speaking of the south-eastern part of New Guinea, where the natives are more numerous and possess and cultivate all the best land. I have appended Baron Von Mueller's report on my collection of dried plants; and on the return of Professor Liversidge to Sydney he will report on the small collection of minerals, &c., I submitted to him for examination; and I hope on a day not far distant to give the ethnological report on the natives, their weapons, &c.; also on the mammals and birds collected, the latter consisting of about fifty species, many of which are new, or only recently described from specimens obtained during my first visit to the Fly River. There is also a rich collection of reptiles, fish, both of salt and fresh water, some beetles, fresh water and land shells. I expect that the voyage of the Neva will be remembered by those who in future will take an interest in New Guinea, and by the scientific world.

I have now to give my grateful thanks to the members of the Committee, who have exerted themselves so much in my behalf, and to the Subscribers, for aiding my private means in accomplishing this exploration.

L. M. D'ALBERTIS, C.M.Z.S.

Sydney, January 15.

APPENDIX.

REPORT OF BARON VON MUELLER, F.R.S., &c.

The collection of plants brought together by Signor D'Albertis during his last expedition to New Guinea is of particular interest, inasmuch as thus for the first time an insight into the vegetation of the more central portions of New Guinea is obtained. But since the distinguished Italian traveller, with the means at his command, could not extend his explorations beyond the country along the Fly River, only plants of a strictly intratropical type and mainly indicative of a jungle vegetation came within his reach. It seems that no Alpine forms of plants descend to that river as far as it was followed by Signor D'Albertis; nor shows by the material, kindly submitted to me, any repetition of the Australian types, which some other portion of South-Eastern Papua have brought to light, except two species of phyllodinous Acaciæ, both distinct from A. Simoii. This almost entire absence of Australian forms in these newly traversed lines, may perhaps be accounted for by geologic circumstances. But now for the first time are added to the hitherto recorded genera of New Guinea plants—Gompharena, Grewia, Melhania, Muhlenbergia, Connarus, Terminalia, Cynometra, Pipturus, Codiæum, Ceratophyllum, Jussiæa, Alstonia, Coleus, Vandellia, Limnanthemum, Calanthe, Eurycles, Costus, Schelhammeria, Dracæna, Hypælytum, Phragmitis, Paspalum, Lycopodium, Helminthostachys, Gleichenia. The collection contains also species representing the following genera :—Myristica (nutmeg), Wormia, Pittosporum, Elæocarpus, Hibiscus, Dysoxylon, Harpullia, Vitis, Semecarpus, Marenga, Phyllanthus, Piper, Albizza, Mucuna, Ferns, Eugenia, Barringtonia, Gardenia, Psychotria, Ixora, Plectronia, Myrmecodia, Ipomæa, Maba, Alstonia, Tabernæmontana, Mæasa, Coleus, Clerodendron, Solanum, Tournefortia, Cycas, Freycinetia, Flagellaria, Calamus, Pothos, Cordyline, Scleria, Kyllingia, Hypælytum, Panicum, Coix, Leptaspis. Besides, there are also representatives of other genera, belonging to Anonaceæ, Menispermaceæ, Rutaceæ, River I found in the natives' houses, carefully preserved, the

Laurinaceæ, Melastomaceæ, Myrtaceæ, Araliaceæ, Urtaceæ Euphorbiaceæ, Acanthaceæ, Gesneriaceæ, Orchidaceæ and Palms; but to define the species of these, and to contrast them with allied forms of other tropical regions, especially of the Sunda Islands, the Philippines, and Polynesia, will require careful investigations, the results of which will be promulgated in the succeeding pages of the publication on "Papuan Plants." As specially noteworthy on this occasion already may be mentioned a Sapindaceous tree with edible fruit. Two Begonias (one with spotted leaves), a grand Hibiscus, and several Amaranthaceous and Scitamineous plants of horticultural importance, further a Nepenthes (Pitcher-plant) distinct from N. Kennedii.

Melbourne, December 1876.

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In the *Sydney Morning Herald* of February 8th, 1877, the following appeared respecting the Papuan Plants:—

The "descriptive notes on Papuan Plants," by Baron F. von Mueller, have now reached eighty-two pages of closely written matter. For a long time New Guinea was thought little of, and its vegetation, with the exception of a few plants occasionally collected on the coast, was almost totally unknown. Some specimens of Papuan plants were gathered during the voyage of the Astrolabe, in 1827, but until recently very little has been done to develop the natural history of New Guinea. Baron Mueller's notes are founded on the collections of the courageous and enterprising travellers Signor D'Albertis along the Fly River, and Mr. A. Goldie in the country beyond Port Moresby. There is great difficulty in determining the species of some of the plants, and the Baron remarks that in such instances "they must be retained until further searches may complete the material needful for accurate investigation, especially as the low land jungle plants of New Guinea stand in close relation to those of insular India, the Philippines and Polynesia." The present descriptions, however, of which the learned botanist speaks so humbly, are, in point of fact, a most valuable contribution to science; and when the descriptions of Dr. Beccari (who has commenced to prepare at Florence the descriptions of his Papaun plants for Carnel's "Giorale Botanico Italiano,") have reached Australia, we shall be able to compare the vegetation of different portions of New Guinea. Dr. Beccari, it seems, made his collections in the north-western portions of the island, whereas Signor D'Albertis and Mr. Goldie have explored the south-east. It is probable, therefore, that there may be a considerable difference in the vegetation, as represented by the respective collections. The Baron records his great obligations to Dr. G. Bennett, for the interest which he has evinced in elucidating the flora of New Guinea; and also to the Rev. S. MacFarlane and the Rev. Dr. Turner for the means afforded of promoting his studies of Papuan plants. Two

inquiries have especially arrested the attention of the Baron, viz.: What relation do the jungle plants of New Guinea bear to those of tropical Australia? And what connection is there between the alpine plants of that island and the vegetation of the Australian Alps? As Baron Mueller visited north-western Australia in 1855 and 1856, and the Australian Alps in 1853, 1854, and 1857-1861, he possesses abundant materials for comparison; whilst his extensive knowledge of plants in general renders him peculiarly qualified for these inquiries. In the present collections there are not many plants of Australian type. No new species of Eucalyptus is recorded, nor any of the Proteads or Epacrids, though many of the plants enumerated are common to Australia and New Guinea. The species apparently new are Hibiscus D'Albertisii, Bauhinia Williamsi, Mucuna Bennettii, M. Albertisi, Combretum Goldieanum, Begonia spilotophylla, Randia Macarthuri, Cycas Papuana, and Dicksonia Papuana. Some others are at present doubtful, because it has not yet been ascertained whether they are Papuan forms, or identical with species common to the Oriental Archipelago. In a former part of the descriptive notes, Eucalyptus Papuana is described, and another of the same genus (probably E. platyphylla) is mentioned as indigenous. Melaleuca, Eugenia, Myrtus, and Rhodamnia, are also said to have representatives in New Guinea; and Barringtonia speciosa (a handsome tree common to the Oriental Archipelago, the Pacific Islands, and North Australia), occurs on Kataw River. It is supposed, that as the forest mountains become better known, vast additions will be made to the plants of the Myrtaceous order. The recent collection has not furnished any more species of the order, as Signor D'Albertis and Mr. Goldie did not reach that part of New Guinea in which such plants are likely to occur. Baron Mueller describes the new Hibiscus and the new Mucuna, named after Dr. Bennett, as being splendid plants. The latter, according to the enterprising explorer, presents one of the most gorgeous sights in the flora of the island. There is a species of Mucuna (a large climbing plant) extending from Clarence River to North Australia, but the flowers are of a pale greenish yellow, and by no means so showy as those of the Papuan species. To the previous orchids two are now added—Dendrobium undulatum and Calanthe veratrifolia—both of which are said to be identical with the plants described by R. Brown more than a half-a-century since. The former appears to be limited to the northern parts of Australia and Java, but the latter, which (according to the "Flora Australiensis," vol. 6, p. 306) extends from Rockingham Bay to Illawarra, has recently been forwarded to Baron Mueller, from the Kurrajong, by Dr. Woolls. It is stated that, in the Australian forms of this species, the lobes of the labellum are rather broader than those of the Indian ones. New Guinea seems to be very rich in ferns, for in addition to those already enumerated, many species are now added, though, for the most part, they are common to other islands as well as to Australia. The last specimen des-

cribed is Capnodium Fuligo, a fungus growing on the leaves of fig trees, and communicated to the Baron by Sir William Macarthur.

The following extract from letters sent by the Baron to Dr. George Bennett since the publication of the 4th Part of the Papuan plants, gives further information on the plants collected by Mr. D'Albertis :—

"The discovery of Banksia, as demonstrated by the collection of fruit, modifies my remarks in reference to the non-Australian type of the vegetation of the Fly River. Among the fruits is a new Sloanea, with very large dark red fruit, much like those of Sloanea Jamaciensis. I have named it S. paradiseanum, as doubtless it is frequented by the paradise birds, who may feed upon the edible seeds. Among the fruits I found those of Nageia, indicative of cooler regions, being coniferous. The collections also contain Heptapleurum. The fruits in alcohol and the dried seeds were well worth examining, and although in the absence of flowers, we must be careful in dealing with such material closely for scientific purposes, yet it has enabled me to add Garcinia, Flindersia, Sideroxylon, Banksia, Heritiera to the genera of Mr. D'Albertis' plants. A number of new genera have also been added to the collection which will appear in the forthcoming parts of the Papuan plants."

ON THE
ORNITHOLOGY OF THE FLY RIVER

Although collecting specimens of natural history was not the principal aim of the voyage, still; from the list of the birds collected and observed, we have, I may say, added a new link to the chain which connects the northern and southern avifauna of New Guinea with that of Australia.

From my list it seems that rapacious birds are scarce in the centre of New Guinea; but if we consider the difficulty of detecting that class of birds in their native forests, and when perched on the branches of lofty trees, or when flying above the dense mass of vegetation, we may consider their scarcity to be more fictitious than real. Among the few collected, it is worth while to mention a pair of the beautiful and rare Henicopernis longicaudatus, which, although inhabiting the Aru Islands. and I think also the north-west coast of New Guinea, is still very rare in the museums of Europe.

Among the parrot family, in which my list is a little richer, I have first to mention the Dasyptilus pecquetii, which, judging by the shape of its bill and head, is almost an aberrant form among

the family. This bird has been for many years very rare in collections, and only one or two skins had reached Europe previous to 1872, when I got four fine specimens on the Arfak mountains, and subsequently it has been found by explorers, but always few in number. It is generally an inhabitant of the mountains, but it is seen occasionally on the plains, and also very far up the Fly River. I met this bird while remaiuing for two days at the same anchorage. I saw about fifty coming to roost on a very high tree in the evening and started in the morning a little after sunrise; but the bird is very shy, and for this reason not easily killed. The Cyclopsittacus fuscifrons is a very small parrot, one of the smallest, and difficult to find in the dense foliage of the trees; but its piercing whistle is often heard. It is not shy, and once the tree on which it feeds is found, it is easily secured. It is very similar to another allied species I discovered at Hall Sound, named by Mr. Sclater, Cyclopsittacus suavissimus, and they resemble each other in their habits.

Chalcopsittacus chloropterus is described by Mr. Salvadori as a new species; but, I cannot see that this bird can be distinguished from Eos scintillata Gray for the distinctive characters pointed out by Mr. Salvadori I consider dependent only on the age, and not constant in all individuals of different age and sex. Many other birds of this family may be added to my list by other explorers, for I saw many, especially among the Charmosyna, but I did not kill any.

The Buceros ruficollis is a common bird all over New Guinea, I cannot say if I saw this species in the interior, or only one perhaps intermediate between B. ruficollis and the Buceros of the Solomon Islands, for I found some beaks of this bird in the houses of the natives so much smaller, although of adult birds. Therefore, I am inclined to believe they may belong to a new species.

Among the kingfishers there is, after Salvadori, another new species—Cyanalcyon stictoleama; but I do not think it is a new species, and I believe the differences pointed out by him between this bird and C. nigrocyaneæ are only derived from the sex or age of the specimen he had under consideration. The specimen I got in the same locality where I procured the first does not differ from C. nigrocyaneæ of the Aru Islands.

An elegant bird which attracts the attention of the traveller is the Cypselus mystaceus, from its peculiar shape, and from the length of its wings and its forked tail. It is seen in the daytime at rest on some high dead tree, and in the evening and early in the morning it flies about chasing the insects on which it feeds.

Flycatchers were very scarce, and indeed I cannot mention more than the beautiful Arses chrysomela, which I had never collected before, and only saw once from New Guinea in Mr. Stone's collection. and which is found also in the Solomon Group. Campephaga sloetii is a rare bird in collections, but it seems to be distributed all over New Guinea, as I have found specimens on

the Arfak, at Hall Sound, and lately far up the Fly River, and there most numerous; but I could not get more than one, which I met in a native's garden feeding on the small berries of a high tree. Along the banks of the river, or on some gravel flat of the river's bed, when the water was low, I saw another interesting small bird, which I discovered in the streams of Mount Arfak, in 1872. It is a lively bird, and is often seen giving chase on the wing to insects, on which it lives. It has been named Monachella saxicolina. The Artamus leucogaster is an Australian bird, but very common also in the the eastern and central part of New Guinea. Its abode is on some old trunk projecting in the river's bed. There it is often seen waiting for insects, which it catches flying, similar to the swallow. Near the mouth of the river I found two little gems of the feathered family, Cyrtostomus frenatus and Hermotimia aspasia. The first one is an Australian and Papuan bird: the second inhabits all over New Guinea and many islands east and west of the same island. Perhaps on account of the flowerless season the Melphagidæ were scarce in number and species; but it is not improbable that I have found a new genus of this family. Only two species of Eupetes have been known for many years as inhabitants of New Guinea. Lately some new ones have been added—one from the west, the other from the east. The last one is also found in the bush up the Fly River, and it has been named Eupetes nigrocrissus by Mr. Salvadori. Other species of this genus will be found in New Guinea; so I think it will not be considered absolutely a Malayan form. Only two Pitta, P. mackloti and P. Novæ Guineæ, were recorded in the Papuan birds. Now I may add a third—which I found for the first time in New Guinea, and killed at Katow River, but it inhabits also Cape York, and is plentiful on many of the Torres Straits islands—that is, Pitta assimilis. So, out of these, two are found in Australia also.

Large flocks of a Calornis were seen on the Alice River hunting after insects, probably of the Libellula tribe, which were so abundant as to cover almost the surface of the river from bank to bank for many miles. They were so plentiful that when seen flying about a little above the water they conveyed to the mind a heavy fall of snow. I could not identify this bird. Many other birds were engaged in a similar chase, and I remember a Graucalus, the Mina Dumontii, the Merops ornatus, and a Eurystomus, probably the crassirostris. Mina Dumontii is a common bird all over New Guinea, and is to be considered with interest by the naturalist; but I may mention that I never saw it so plentiful as on the upper part of the Fly River.

Another Mina, which I consider to be new to science, was very scarce, and only four specimens were seen, and two killed. Its description is as follows: Male—head, neck, and breast rich orange golden colour; throat and sides of the head, dark blackish green; abdomen, above and below, black, each feather margined with dark shining green; rump and tail cover, deep golden

orange; belly, yellow; undertail cover, white, tipped by a light yellow; wings and tail, black; primaries, white spotted; bill, eyes, and feet, yellow. The female is very similar to the male. I named this bird in honour of the Hon. John Robertson, Colonial Secretary of New South Wales, Mina Robertsonii. Manucodia Keraudrenii is found in Australia and New Guinea. The specimens from Cape York have lost the name of M. Gouldii, but I have before me specimens from New Guinea and Cape York, and they are at once distinguished from each other. The specimens from Cape York are of a uniform dark, shining green, while specimens from New Guinea differ, having the wings, tail, and back of a rich shining purplish violet.

Gymnocorvus senex, a very common bird all over New Guinea, is remarkable for the great difference of its plumage at different ages. It was to be expected that in the centre of New Guinea many species of Paradise brids would be found, but only six species are given in my list, and certainly many others may be discovered. The most beautiful of them, no doubt, is the Seleucides albus, or twelve-wired Bird of Paradise, and at the same time one of the rarest. On the upper part of the Fly River I saw it several times crossing the river very slowly, and often in the morning and before sunset it was seen on the top of some high tree motionless and uttering its mournful note. It is a very suspicious bird, and for this perhaps is still rare in museums. It is found also on the north-west coast of New Guinea and Salwatti Island. Cicinnurus regius is a very common bird found also on the north coast and Aru Island. Sericulus aureus is found also all over New Guinea. I saw it on the Arfak Mountains, at Najabui, in the eastern peninsula, and now also up the Fly, but it is a rare and shy bird. Mr. Salvadori places this bird close to the Chlamydodera, but I cannot see more affinity in this bird with Chlamydodera than with Cicinnurus, but at the same time, by its head, bill, wings, and shortness of the tail, I think it nearer to Cicinnurus than to the Chlamydodera. To say that it has not the same habits of the true Paradise birds is not of much value, for nearly every species, or at least every genus, has its own habits.

Ptiloris magnifica is found also in Australia and on the west coast of New Guinea and Salwatti. Paradisea raggiana, discovered at Orangerie Bay in 1873, by myself, extends its habitat up to the centre of New Guinea, and seems to be common enough; its plumes are used by the natives as head dresses all over the country where the bird is found. Another bird, very closely allied to the last-mentioned, is Paradisea apoda; if not a new species resembling it very much. Allowing it is P. apoda, it is the first time this bird has been met with in New Guinea, and only was believed to be an inhabitant of the Aru Islands. The fact of two species so alike living in the same locality is of some interest and suggests some remarks. There are now four species of the true genus Paradisea, viz, P. apoda, P. papuana, P. rubra, and P. raggiana. The former two resemble each other very

closely by the long yellow plumes at the side of the breast, while the last two resemble each other by the red colour of the same plumes, but differ by the two middle tail feathers, &c. So far as we know, P. apoda inhabits Aru Islands and the mainland of New Guinea, south of the Charles Louis mountains; Paradisea Papuana, the west to 134 deg. longitude E., and north of the above-mentioned range, so far as 141 deg. longitude E., and other islands north of New Guinea. The two red species, instead, are living very far from each other; the rubra seems confined to Waigiou Island, and P. raggiana to the centre and eastern peninsula of New Guinea. But it is not improbable that rubra also may be found some day in New Guinea.

After comparing the rich series in my collection, of the specimens of P. apoda and P. raggiana, I see a great similarity between the young male and female birds of the two species, and they indeed can be only recognized by the yellow tint on the back of the head and neck in young and female birds of P. raggiana After the first moulting, they are generally distinguished by a small yellow band across the small wing-cover of the raggiana, and also by a yellow collar between the green of the throat and the dark purplish chestnut of the breast. It is only after the first moulting that the yellow of the head and the green of the throat are fully developed, and, nevertheless, in a young specimen of the raggiana at this stage of moulting there is no yellow band on the wings, and were it not for a beginning of the yellow collar it could not be distinguished from another bird of the apoda of the same age. At the same time on another young bird of the apoda, and of the same age, I observed the tips of the wing-cover slightly tinged with yellow, and in another younger specimen of the apoda the back of the head and neck is also, although very little, inclined to yellowish. Are these facts of such a nature as to allow us to suppose that the two species are derived from a common parent perhaps now extinct? And if so, will it not be the same with the two other species of the west—viz, P. papuana and P. rubra? Shall we consider the four species independent in their origin, or that they are derived from a type lost or not found yet? Or shall we consider each one as a primitive species? It would be of interest to know if the feathers mentioned by Schlegel as found among the natives at Humboldt Bay were from the Apoda or from the Papuana, to see if, as I believe, the two species are separated by the alpine range above mentioned. If so, we could have in this fact a good proof to show that high ranges of mountains are more effective barriers to prevent emigrations than the sea and the jungle. From the first insight we have of the fauna of southern New Guinea, we have learned how in this part of the country Australian forms, genera, and species are abundant, and are generally found in preference to allied species now inhabiting the north-western coast; and I think that what applies to the animals will be also found in a less degree to apply to the plants. So we find a large number of specie

inhabiting North Australia, Aru Islands, and New Guinea, because the narrow sea which separates the three countries may be easily crossed even by birds of not very great power of wing.

So far as I can guess from my last visit to the central part of New Guinea, as well as from some fossils collected there, I think that all the flat land from the coast of Torres Strait up perhaps to the foot of the mountains has been submerged, and raised again in a not very ancient time, and probably when Aru Islands and Australia were separated from New Guinea. Plants and animals which during the time of subsidence could live on the mountains, at the new rising of the land descended to populate it again more or less modified, and others emigrated from the nearest land, especially from Australia, and established themselves there, probably undergoing some modifications, but at all events retaining much of the characters of the primitive type. And while the species inhabiting the lowlands on both sides of the mountains differ much, we find that those inhabiting the mountains are almost invariably the same on both sides, no matter what the difference of latitude or longitude may be. This may be explained, for the alpine forms are not subjected to sensible change of temperature, soil, &c, in their emigration, so long as they keep to the mountains. On the other hand, the forms of the plain cannot cross the high mountains without modification.

The geological union of Australia, Aru Islands, and New Guinea in a recent time is to me a certainty, and I cannot consider the gigantic peaks of Torres Straits but as the links of the chain which has for a time united Australia to New Guinea. Mount Ernest Island, The Brothers, and Tawan Island, and all the other islands of Torres Straits are faithful witnesses of this. When the fauna and flora of New Guinea and North Australia will be better known and compared, especially reptiles, small mammals, fresh-water fish, and other small animals, of limited power for emigration, the fact will be proved. Although I propose to remain on the subject of birds, I cannot refrain from mentioning the existence of an Echidna in New Guinea. Very far up the Fly River I found in the natives' houses, carefully preserved, the quills of an Echidna, and also many arrows whose barbs are made with such quills. It is within my knowledge that the Rev. Mr. Lawes obtained at Port Moresby a young animal from the natives, and which was described to me like a platypus; but I am inclined to believe it is a young Echidna * The importance of such a discovery needs no comment.

Among the pigeon family I may mention Carpophaga spilorrhea, C. Zoeæ, C. Mullerii, Megalaprepria assimilis, Ptilonopus superbus, P. ionozonus, P. coronulatus, P. auranturons, and Ptilonopus nanus, which inhabits principally New Guinea, Aru Islands, and North Australia. A bird strictly Papuan, one of

*The above was written when I received from Italy the description of Tachyglossus (Echidna) Bruijnii (W. Peters and Doria), founded on a portion of a skull found on the Arfak Mountains.

the largest of this family, is the crested pigeon or Goura, of which four species are known, viz., G. Victoria, G. coronata, G. Albertisi, and G. Sclaterii, although the former has not yet been found on the Papuan continent. G. coronata is found on the north-west, and G. Albertisi on the eastern peninsulas, and G. Sclaterii in the central part of New Guinea, where I discovered it during my first visit to the Fly. During my second trip I found it also at the Katow River. I also found the pretty Ptilonopus nanus, Dendrocygna guttata, D. vagans, Nettapus pulchellus, Pelecanus conspicillatus, Hæmatopus longirostris, Mycteria Australis, and Tachypetes, Prion, &c., all birds common to the Aru Islands and Australia, and only lately added to the list of New Guinea birds. I wish I could give the specific name of a beautiful cassowary, of which I possess a skin and skeleton; but so many species of this bird have been lately described that I cannot venture to say to which it belongs, but I am inclined to think it may be allied to or identified with Casuarius Australis.

List of birds from Fly and Katow rivers: Cuncuma leucogaster, Haliastur girronera, Haliastur sphenurus, Pandion leucocephalus, Henicopernis longicaudatus, Microglossum aterrimum, Dasyptilus pecquetii, Cacatua triton, Eclectus polychlorus, Chalcopsittacus scintillatus, Lorius lory, Eos fuscata, Cyclopsittacus fuscifrons, Caprimulgus n. sp.? Cypselus mistaceus, Dacelo gaudichaudii, Cyanalcyon Macleayi, Cyanalcyon nigrocyaneæ, Tanysiptera galatea, Pitta macklotii, Pitta assimilis, Arses telescophthalma, Arses chrysomela, Rhipidura gularis, Rhipidura sp.? Gerigone sp.? Grancalus sp.? Ptiladela boyeri, Campephaga sloetii, Artamus leucogaster, Rectes ferruginea, Buceros ruficollis, Hermotimia aspasia, Cyrtostomus frenatus, Myzomela obscura, Myzomela erythrocephala, Ptilotis filigera, Ptilotis n. gen.? Ptilotis sp.? Tropidorhyncus Novæ Guineæ, Pomatorinus isidorii, Calornis sp.? Dicæum rubro coconatum, Gymnocorvus senex, Manucodia atra, Manucodia Keraudrenii? Mina Dumontii, Mina Robertsonii, Paradisea apoda? Paradisea raggiana, Cicinnurus regius, Sericulus aureus, Epimacus magnificus, Seleucides albus, Dicrurus carbonarius, Carpophaga pinon, C. Zoeæ, C spilorrhoa, C. Mullerii, C. n. sp., Megaloprepia assimilis, Ptilonopus nanus, P. coronulatus, P. jonozonus, P. aurantifrons, Goura Sclaterii Eupetes nigricrissus? Megapodius duperreyi, Talegallus cuvieri, Ibis strictipennis, Ibis igneus, Lobivanellus personatus, Mycteria Australis, Herodias alba, Herodias melanopus? Butoroides flavicollis, Ardea jugularis, Nyctocorax Caledonicus, Dendrocygna guttata, Dendrocygna vagans, Nettapus pulchellus, Hæmatopus longirostris, Tachypetes aquila, Prion turtur, Pelecanus conspicillatus.

Amount of the Subscriptions paid in aid of Mr. D'Albertis' Exploration of the Fly River, New Guinea..... £449 6 6

P.S.—In connection with the Subscriptions, the Committee are desirous of placing on record their sense of the liberality evinced by Charles Moore, Esq., Director of the Botanic Gardens, who, previous to the leaving of the Expedition, offered to recommend to the Government to defray the expense of sending a professional botanical collector with the Expedition, —in which he succeeded,—although Signor D'Albertis was obliged to decline the offer, principally on account of the small size of the "Neva," and the very limited accommodation he should have been able to afford such collector.

GEORGE BENNETT, M.D.
JAS. R. FAIRFAX..... } Hon. Treasurers.

ARVID NILSON, Hon. Secretary.

1876.	Dr.	£	s.	d.
June 13.—	To amount of subscriptions received and advertised in the *S. M. Herald*	429	6	6
	Refund by the E. & A. M. S. Co.....	20	0	0
	Total	£449	6	6

1876.	Cr.	£	s.	d.
April 19.—	By Advance to Mr. D'Albertis	100	0	0
May 22.	Moreman, for wages.....	4	0	0
25.	Mitchell & Co. for goods	12	4	0
June 19.	Purser of the s.s. Bowen, for coal	8	0	0
	Scott, Henderson & Co., for passage of six men from Cooktown to Somerset	18	0	0
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July 8.	E. & A. M. S. Co., for freight on steam launch	55	0	0
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Dec. 12.	C. Wilcox, for ditto	24	0	0
15.	A. Tornaghi, for money advanced to pay wages.....	27	0	0
18.	Orders on Treasurers in favour of Webb and Co.	93	10	6
1877.				
Jan. 24.	Orders on Treasurers in favour of Captain Redlich	20	0	0
	Ditto ditto Bob, for wages	26	5	0
Mar. 12.	Advertising Committee meetings and subscriptions.....	3	15	6
27.	Balance in Bank to meet expenses of printing report, postage, &c.	12	10	6
	Total	£449	6	6

Examined and found correct, this 27th day of March, 1877.
JOHN ALGER, Auditor.

GEORGE BENNETT, M.D.
JAS. R. FAIRFAX,
} Hon. Treasurers.